

From: Peter Kang
To: internet:djw@nei.org
Date: Thu, Jan 18, 2001 3:54 PM
Subject: Outline for Meeting on January 30th for Structure and Fire Protection Issues

Doug:

The attached is a preliminary handout for the January 30th meeting to discuss open (structure and fire protection) issues. This listing provides the staff's preliminary resolution to the issues.

Kang

CC: Cig, PTK

**NEI Issues on Improved License Renewal Guidance Documents
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| 35 | Use of IWE with Appendix J and coatings program | G-IIA1-10 G-XI.S4-1 G-XI.S8-1 | <p>NEI commented (Comment No. G-IIA1-10) that the Appendix J (XI.S4) and Coatings (XI.S8) AMPs be deleted as GALL requirements for managing loss of material due to corrosion for steel elements of containment. NEI's justification is that the IWE (XI.S1) AMP is acceptable as a stand-alone program.</p> <p>10 CFR Part 50, Appendix J Leak Rate Testing (XI.S4) is a mandatory program. Measurement of an unacceptable leak rate would require an assessment of the cause. The cause may be due to aging degradation from loss of material, cracking, and/or change in material properties. Consequently, the staff considers that this program provides an indirect method for detecting aging effects, and supplements ASME Section XI, Subsection IWE inspection requirements.</p> <p>With respect to the Coatings Program, the GALL report (XI.S8) defines a technical basis acceptable to the staff for a coatings monitoring and maintenance program. If a coatings program is credited for managing loss of material due to corrosion during the current licensing term, then the Gall report recommends that it needs to be continued during the period of extended operation. The staff is considering to clarify the Chapter II tables in all applicable locations with respect to the protective coatings program.</p> <p>NEI commented (Comment No. G-XI.S4-1) that the containment inspection requirements of 10 CFR 50 Appendix J be acknowledged in the Evaluation and Technical Basis for the Appendix J (XI.S4) AMP. NEI's justification is that, prior to mandatory IWE and IWL inspections, Appendix J inspections were performed and provided the operating experience base for containment aging.</p> <p>The Gall report includes discussion regarding prior Appendix J containment</p> |

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| | | | <p>inspections in the discussion of "Operating Experience" for the IWE (XI.S1) and IWL (XI.S2) AMPs. Since the mandatory inspection requirements of IWE and IWL have essentially superceded the Appendix J inspections, the Evaluation and Technical Basis for the Appendix J (XI.S4) AMP only addresses the leak rate testing requirements of 10 CFR 50 Appendix J.</p> <p>NEI commented (Comment No. G-XI.S8-1) that the Protective Coating Monitoring and Maintenance Program (XI.S8) be deleted. NEI's justification is "This Aging Management Program is not credited for loss of material due to corrosion of steel." See (NEI Comment No. G-IIA1-10) discussed above.</p> |
| 36 | Inaccessible areas – containment liner | G-IIA1-1 | <p>NEI commented (Comment No. G-IIA1-1) "There are additional requirements for inspection of inaccessible areas when there are no indications of degradation for (adjacent, nearby) accessible areas. This requirement should be removed from Evaluation and Technical Basis and Further Evaluation." NEI's justification is that imposing such requirements is tantamount to additional rulemaking over and above 10 CFR 50.55a without adhering to the rulemaking process. Section (b)(2)(viii)(E) of 10 CFR 50.55a says "the licensee shall evaluate the acceptability of inaccessible areas when conditions exist in accessible areas that could indicate the presence of or result in degradation to such inaccessible areas."</p> <p>The staff considers that the GALL report is not equivalent to rulemaking. It defines a basis acceptable to the staff for aging management for license renewal. To clarify the GALL provisions for aging management of inaccessible areas, the staff is considering developing specific criteria that can be applied to address inaccessible areas as follows:</p> |

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| | | | <p>For the "Aggressive Chemical Attack" and "Corrosion of Embedded Steel" aging mechanisms, aging management of below-grade exterior inaccessible areas is considered satisfied if the applicant establishes that the below-grade environment is not aggressive, in accordance with criteria presented in revised GALL Chapter II.</p> <p>For the "Leaching of Calcium Hydroxide" aging mechanism, aging management of below-grade exterior inaccessible areas is considered satisfied if the applicant establishes that this aging mechanism is not significant, in accordance with criteria presented in revised GALL Chapter II.</p> <p>For corrosion of inaccessible steel areas of containment, the staff's concern is that concrete containment steel liners or steel containment shells that are embedded in the concrete floor slab are potentially subject to degradation from inside containment (i.e., water on the containment floor seeping through cracks in the concrete floor or past degraded joint sealants). The staff is considering adding specific criteria based on a proposal submitted by NEI on 12/4/00 in GALL Chapter II to address inaccessible steel areas of containments.</p> <p>If any of these criteria cannot be satisfied, then a plant-specific aging management program is required to address that aging mechanism for inaccessible areas. The staff is considering revising Chapter II tables to incorporate this additional guidance in all applicable locations.</p> |
| 37 | Equipment hatch hinges | --- | <p>NEI commented (Comment No. G-IIA3-7) revising the Aging Mechanism to read "Mechanical Wear of Locks, Hinges and Closure Mechanisms required to maintain the airlock/hatch in the closed position". At the 12/21/00 staff meeting with NEI, NEI raised a new issue relating to hinges, locks and closure mechanisms: these are</p> |

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| | | | <p>active components and consequently are outside the scope of 10 CFR Part 54.</p> <p>The staff considers that a passive intended function meeting the criteria of 10 CFR Part 54 exists for locks, hinges, and closure mechanisms on containment airlocks and hatches. It is to maintain leak-tight integrity of airlocks and hatches when they are in the closed position. Consequently, the staff is considering incorporating NEI's proposed wording in GALL Chapter II. However, the staff considers these items to be within the LR scope.</p> <p>The staff notes that aging management is accomplished by existing programs (IWE, Appendix J leak rate testing); no augmentation is specified in GALL. Further, the staff notes that a plant-specific Technical Specification that defines inspection and maintenance requirements for these locks, hinges and closure mechanisms could be considered as alternative AMP.</p> |
| 38 | Structural monitoring program | G-III A1-7 G-XI.S5-4 | <p>NEI commented (Comment No. G-III A1-7) that either the Structures Monitoring Program (XI.S6) or Masonry Wall Program (XI.S5) may be used to manage aging for masonry walls.</p> <p>The staff is considering revising GALL Chapter IIIA as proposed. In addition, guidance on the applicability of the Structures Monitoring Program (XI.S6) for aging management of masonry walls is being considered adding in the Program Description for the Structures Monitoring Program (XI.S6). See discussion below.</p> <p>NEI commented (Comment No. G-XI.S5-4) that the following wording should be used at the end of the Program Description for the Masonry Wall Program (XI.S5):</p> |

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| | | | <p><i>“Since the issuance of the IEB 80-11 and IN 87-67, the NRC promulgated 10CFR50.65, the Maintenance Rule. Masonry walls may be inspected as part of the Structures Monitoring Program (XI-S6) conducted for the Maintenance Rule. In these cases, the Maintenance Rule evaluation (XI-S6) for license renewal applies and no further explanation is required.</i></p> <p><i>For plants with a separate masonry wall program, the following evaluation and technical basis is provided:”</i></p> <p>NEI’s justification is that this would provide for use of an existing Structures Monitoring Program and would also provide a method for using a plant specific program for managing aging of masonry walls.</p> <p>The staff is considering to incorporate NEI’s proposed wording in the Program Description for the Masonry Wall Program (XI.S5), except for the sentence <i>“In these cases, the Maintenance Rule evaluation (XI-S6) for license renewal applies and no further explanation is required.”</i></p> <p>To clarify the applicability of the structures monitoring program (XI.S6) to aging management for masonry walls, the staff is also considering revising the Program Description for XI.S6 to stipulate that XI.S6 incorporate the attributes described in XI.S5 when being credited to managing aging of masonry walls. The staff notes that in general a Structures Monitoring Program to meet the Maintenance Rule will not include consideration of seismic II/I as an intended function. This is an intended function for license renewal. Many masonry walls within the scope of license renewal are not automatically in the scope of a Structures Monitoring Program. The applicant must ensure that all masonry walls in the LR scope are included before</p> |

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| | | | taking credit for a Structures Monitoring Program. |
| 39 | Structural monitoring program, Regulatory Guide 1.160, and Appendix B of 10 CFR 50 | G-XI.S6-4 G-XI.S6-5 G-XI.S6-6 | <p>NEI commented (Comment Nos. G-XI.S6-4, -5, -6) to reword Attributes 7, 8 and 9, respectively to read "The Structures Monitoring Program should be conducted under 10CFR50 Appendix B (Quality Assurance) for Corrective Action [Confirmation] [Administrative Controls], or an existing quality assurance program developed for the Maintenance Rule Program." NEI's justification is that Reg. Guide 1.160 Revision 2 recognizes that the Maintenance Rule program includes non-safety related structures and does not require that the licensee develop paper work for BOP to meet the requirements of 10CFR 50 Appendix B requirements.</p> <p>The staff considers that any non-safety related structures or components that are within the scope of LR serve an intended function, in accordance with the criteria provided in 10 CFR Part 54. If aging management of these structures and components is accomplished under an applicant's Structures Monitoring Program, 10 CFR 50 Appendix B applies. In addition, plant-specific QA programs developed for the Maintenance Rule Program cannot be evaluated generically as part of GALL. To reference GALL, attributes (7), (8), and (9) must be addressed by a commitment to 10 CFR Part 50, Appendix B. A license renewal applicant may take exception to this provision of GALL and describe an alternate plant-specific approach for addressing these attributes.</p> |
| 40 | Tendon gallery | G-IIA1-13 | <p>NEI commented (Comment No. G-IIA1-13) to delete the paragraph under evaluation and technical basis that discusses the tendon gallery. NEI's justification is that the environment of the tendon gallery is similar to the external dome environment. Both environments subject the tendon anchorage to moisture,</p> |

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| | | | <p>humidity, etc. Therefore, the tendon gallery environment is not unique and should not be singled out. In addition, the tendon anchorages are protected from the moist, humid environment by the tendon caps and grease that is within the cap. Subsection IWL evaluates the tendon anchorages regardless of where they are located. Subsection IWL would evaluate tendon anchorage within the tendon gallery.</p> <p>The staff notes that the discussion of the tendon access gallery was for information only, to indicate that managing the condition and environment in the tendon access gallery is a prudent way to manage degradation of tendon anchorage components located there. GALL does not impose any requirement for aging management of the tendon access gallery because the tendon access gallery does not serve an intended function, in accordance with the criteria of 10 CFR Part 54. Consequently, the paragraph in question is not an essential part of GALL. The staff is considering deleting the paragraph from GALL Chapter II in all applicable locations.</p> |
| 41 | Tendon prestress monitoring not a TLAA | S4.5-1 G-X.S1-1 G-X.S1-2 | (1) In comment S4.5-1, NEI commented replacing Chapter 4.5 of the SRP with the NEI version of the Chapter 4.5. NEI states that based on its interpretation of a TLAA presented in the Rule, the TLAA for Containment Tendon Prestress consists only of the PLL curves that currently are calculated out to 40 years. The trend lines of the actual measurements, and any comparison of these trend lines to the PLL curves, do not constitute a TLAA, because they are in no way based on the forty-year operating life of the plant. The trend line is based on data taken at individual points in time that have no relation to a forty year life, and the trend line is compared to whatever point on the PLL curve it intersects, not to the point on the PLL curve representing 40 years. |

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| | | | <p>The staff considers that the estimation of PLLs and MRVs are parts of the basic design calculations, that are required whether the license renewal application is made or not. The purpose of this TLAA is to demonstrate that the time-dependent characteristics of the actually measured prestressing forces remain above the corresponding PLLs and MRVs. As a result of an earlier NEI comment on GALL IIA1.3, the staff had agreed to make the trend line comparison with the corresponding MRVs rather than PLLs, as that is required by 10CFR50.55a(b)(2)(ix)(B) [August 1996]. Therefore, the staff considers NEI's comment inappropriate.</p> <p>(2) In comment G-X.S1-1, NEI commented moving the TLAA description given in G-X.S1 to Chapter XI. As matter of organization, the staff has provided its views when an applicant chooses to perform its TLAA in accordance with option (iii) of 10CFR54.21(c)(1) as refer to in GALL Chapter X. NEI suggests merging G-X.S1 with Chapter XI related to specific AMPs. Because the attributes to be addressed in G-X.S1 should be related to the time-dependent characteristics of the prestressing forces in prestressed concrete containments, the staff considers this comment unacceptable.</p> <p>(3) In comment G-X.S1-2, NEI seeks the clarification of "trend line," and questions a phrase in the Program Description, "soon after the inspection."</p> <p>The "trend line" represents the time-dependent characteristics of the actual prestressing force in a group of tendons. It is constructed using the prestressing forces measured during the scheduled inservice inspections (RG 1.35 and Subsection IWL). Normally, it is constructed using the least square method of fitting a curve (Attachment 3, IN 99-20). It can be used to estimate the trend of</p> |

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| | | | <p>prestressing force in the future.</p> <p>If an applicant wants to perform its TLAA using option (ii) of 10CFR 54.21(c)(1), it can project it to 40 and 60 years, and demonstrate that as of to-date, the trend of prestressing forces in the group of tendons are adequate and that at 60 years the prestressing forces will be above the MRV. The applicant, however, may have to change its estimates with subsequent inspections.</p> <p>If an applicant chooses to use option (iii) of 10CFR 54.21(c)(1), the applicant needs to have an aging management program (as per G-X.S1) that will track the trending of prestressing forces in subsequent inspections, and during each inspection it will conform to the requirement of 10CFR 50.55a(b)(2)(ix)(B) [August 1996]. This option is good for applicants who do not have reliable database from the prior inspections.</p> <p>Depending upon the angle between the trend line and the PLL line, the trend line may meet the PLL line in the next 2 years or the next 20 years. Thus, comes the phrase "could go below MRV soon after the inspection."</p> |

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| 42 | Containment dissimilar metal welds | G-IIA3-1 | <p>NEI commented (Comment No. G-IIA3-1) to delete the dissimilar metal welds from the Material column. NEI's justification is that 10 CFR 50.55a(b)(x)(C) states that the examination of these items is optional.</p> <p>The staff notes that 10 CFR 50.55a does not state that examination of dissimilar metal welds is optional. 10 CFR 50.55a states that IWE Examination Category E-F, which is a surface examination of dissimilar metal welds (e.g., liquid penetrant inspection), is optional. IWE Examination Categories E-A and E-C are also applicable to dissimilar metal welds and are required by 10 CFR 50.55a. Consequently, the staff is not considering revising GALL Chapter II as NEI commented.</p> |
| 43 | Spent fuel pool liner water chemistry | G-III A5-1 | <p>NEI commented (Comment No. G-III A5-1) to delete the discussion in the Evaluation and Technical Basis column (Aug 2000 draft) and insert the Water Chemistry Program (XI.M11) as the applicable AMP for managing SCC and crevice corrosion for the stainless steel spent fuel pool liner. NEI's justification is that the water chemistry program precludes aging effects by maintaining the spent fuel pool parameters such that degradation would not occur.</p> <p>The staff has considered NEI's comment. The Water Chemistry Program (now XI.M2) has been identified as the applicable AMP. However, in addition to the Water Chemistry Program, the staff considers that monitoring of the spent fuel pool water level be also specified, because reliance solely on control of water chemistry does not manage potential degradation from the concrete side of the spent fuel pool liner. Such degradation has occurred at one plant.</p> |

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| 44 | Bolting program – IWF not bolting integrity program | G-IIIB1-3 | <p>NEI commented (Comment No. G-IIIB1-3) that the program for managing SCC of low-alloy high-strength bolts used in NSSS component supports should be Subsection IWF, not the Bolting Integrity Program. NEI's justification is that the components listed in "Class I Piping and Component Supports" are within the scope of IWF, which has been found to be acceptable for managing this aging effect in NUREG-1723.</p> <p>The staff notes that cracking due to SCC is not adequately managed by IWF, which only requires a VT-3 visual inspection of most support details. Cracking of bolts due to SCC can only be detected by examinations developed specifically for this purpose. The staff is considering revising Bolting Integrity Program (XI.M18) to include consideration of stress corrosion cracking (SCC) for high strength bolting associated with NSSS supports. Thus, the staff is not considering revising GALL Chapter IIIB.</p> |
| 45 | Eliminate A-46 – scope, acceptance criteria | G-XI.S5-1 G-XI.S5-5 | <p>NEI commented (Comment No. G-XI.S5-1) the deletion of references to the USI A-46 program in Attributes 1 and 6 of the Evaluation and Technical Basis for XI.S5 and to replace with references to masonry walls within the scope of license renewal. NEI's justification is that reference to A-46 program is inappropriate because the evaluation of masonry walls is not a defined element of the USI A-46 program. The appropriate reference is to "those masonry walls within the scope of license renewal".</p> <p>The staff notes that any masonry walls identified and evaluated during the USI A-46 program that have an intended function consistent with the criteria of 10 CFR Part 54 must be included in the scope of license renewal. The purpose of the reference to the USI A-46 program is to alert applicants and reviewers that these masonry</p> |

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| | | | <p>walls need to be included in the license renewal scope. In addition, masonry walls that serve a fire barrier function necessary to meet 10 CFR 50.48 are also within the scope of license renewal. In order to clearly define the masonry wall scope for license renewal, the staff is considering to revise Attribute (1) – Scope of Program as follows: <i>“The scope includes all masonry walls identified as performing intended functions in accordance with 10 CFR 54.4 (e.g., IEB 80-11, USI A-46, 10 CFR 50.48).”</i></p> <p>NEI commented (Comment No. G-XI.S5-5) to replace the Aug 2000 draft version of the Masonry Wall Program (XI.S5) with the following: Scope of Program: The scope of the program includes those masonry walls within the scope of license renewal. (Justification: There is no need to include USI A-46 program here. It is addressed in Operating Experience.) Preventive Actions: No specific preventive actions are required. (Justification: The program is a visual inspection and no preventive actions are identified. The staff has found this acceptable.) Parameters Monitored/Inspected: Visual inspection by a qualified individual is sufficient to identify cracking of masonry walls. (Justification: Cracking is the primary parameter.) Detection: A visual inspection performed using the guidance of IEB 80-11 and IN 87-67 provides reasonable assurance that the aging effect of cracking will be identified prior to loss of the component intended function. (Justification: Frequency does not need to be specified here. Frequency is per the current licensing basis.) Monitoring and Trending: There is no monitoring and trending processes associated with this program. (Justification: The NRC staff has found this acceptable.) Acceptance Criteria: Acceptance criteria are no visual indication of cracking of masonry walls, which would invalidate the evaluation basis in response to IEB 80-</p> |

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| | | | <p>11. (Justification: Do not expand criteria previously established.) (10) Operating Experience: Incorporation of lessons learned from the implementation of IE Bulletin 80-11, USI A-46, and the MR Inspection should assure the structural integrity of all masonry walls important to safety are adequately managed. This should ensure the structural integrity of the masonry walls within the scope of license renewal is adequately managed for the period of extended operation. Delete Note. (Justification: Note has been incorporated in text above in Introduction.)</p> <p>This NEI proposal had been previously submitted in March 2000. For the August 2000 draft of GALL, the staff did not consider it because the change lacked the level of detail needed to clearly define the attributes of an acceptable AMP for masonry walls. Thus, an AMP for masonry wall delineated in G-XI.S5 is to remain.</p> |
| 46 | Vibration of supports and cyclic induced cracking – location in GALL | G-IIIB1-2 | <p>NEI commented (Comment No. G-IIIB1-2) that vibration and cyclic induced cracking is not a license renewal aging effect and should be deleted.</p> <p>NEI's justification is that cracking due to vibratory loads and cyclic loading is not an aging effect requiring management for the period of extended operation. For components that may be subjected to vibratory or cyclic loading, proper design eliminates or compensates for vibration and cyclic loading. In addition, vibration characteristically leads to cracking in a short period of time, on the order of hours to days of operation. For example, a component with 1 Hertz vibratory load will be subject to 10^7 cycles in four months of service, so that failure, should it occur, is probable early in life for vibratory stresses above the endurance limit. Because this time period is short when compared to the overall plant operational life, any cracking</p> |

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| | | | <p>will be identified and corrected to prevent recurrence long before the period of extended operation. This type of degradation is limited to a small set of components and is corrected as discovered with inspections of similar locations and configurations to ensure the event is location specific or a one-time event.</p> <p>The staff has considered that cracks in steel elements of component supports caused by vibratory stresses above the material endurance limit would develop in a matter of hours or days. This time frame is not consistent with the requirements of the License Renewal Rule, which address slow aging processes affected by extended operation.</p> <p>The staff has also considered that the potential for cracking induced by other cyclic loads, such as thermal cycling of the supported system, is implicitly considered in structural steel design through the specification of conservative design allowable stresses that account for a minimum of 10⁵ load cycles.</p> <p>However, the staff have concern that concrete located around expansion, undercut or embedded anchors for component supports is susceptible to cracking as a result of service-induced loads on the supports. This could result in reduced capacity of the support anchorage and consequential failure of the anchorage during a design-basis event (e.g., earthquake). The staff considers that maintaining sound conditions in the concrete around support anchors is critical to the intended function of the support and requires aging management.</p> <p>Based on the NEI's comment, the staff is considering to revise GALL Chapter IIIB to reflect the current staff views on vibration and cycling loading of supports, while retaining aging management of concrete surrounding expansion, undercut, and</p> |

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| | | | embedded anchors; the Structures Monitoring Program is identified as the applicable AMP. |
| 47 | Fatigue and inspections of feedwater and CRDRL nozzles | G-IV-A1-5 G-IV-A1-7 | <p>NEI commented to change the "Further Evaluation" column to read "No, fatigue is managed through an inspection program". The staff acknowledges that there have been approved NUREG-0619 programs that address the feedwater and CRDRL nozzles. These programs do not supercede the analysis of record and may not necessarily address the entire component. Design fatigue analyses for these nozzles need to be extrapolated to 60 years. Therefore, the staff considers fatigue evaluation for these nozzles are a TLAA and there should be "Yes" in the further evaluation column.</p> <p>The inspection of these nozzles does not preclude having a TLAA evaluation (unless the design basis is changed and this can be requested by the applicant)</p> <p>NEI commented that every place the "aging effect" is identified as "cumulative fatigue damage" should be revised to "cracking". The staff considers that usage is monitored to prevent cracking directly. The AMP does not directly monitor cracking but tracks the cumulative usage factor to prevent cracking. cumulative fatigue damage is the appropriate aging effect and terminology. Therefore, GALL should not be changed.</p> |

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| 48 | SRP 4.3.2.1.2.3 – wording for cycle counting | S4.3-8 | <p>NEI commented (Comment No. S4.3-8) replacing the existing text in 4.3.2.1.2.3 with the text presented in Section 4.3.2.1.1.3. NEI states that, "the piping that was designed to B31.1 can be managed by cycle counting the same as piping designed to ASME Section III."</p> <p>Staff considers that the existing wording does not preclude B31.1 plants from cycle counting. However, the staff is not aware of any instances where applicants plan to monitor cycles for the B31.1 cycle limits. Therefore, the staff has not developed an AMP similar to the AMP used for plants with fatigue analyses (ASME Section III, Class I designs.) The staff is not considering modifying SRP-LR to address this comment.</p> |
| 16b | Wear/loss of material – no operating experience | G-VII-G-8 | <p>NEI commented that entries for Wear in the fire rated doors in Section G of Chapter VII should be deleted because the degradation is insignificant.</p> <p>The staff considers that fire rated doors are mostly checked for function and less often for degradation such as (clearance tests, worn hinges, latch). Failures may provide a path for the spread of fire or fire products (smoke and heat) beyond a single fire area. The term "insignificant" does not imply that the intended function will not be affected over a period of time. Operating experience is discussed in the Oconee LRA (page 4.16-3) and the Oconee SER (page 3-35). On page 4.16-3 (Section 4.16.1.2, operating experience) of Oconee LRA, it states "Previous inspection of the fire doors have identified wear of the hinges and handles."</p> |
| 61 | SECY 96-146 on fire barrier | G-VII-G-4 | <p>NEI commented that no aging effects should be identified for penetration seals according to SECY-96-146.</p> <p>The staff considers that in NUREG-1552, "Fire Barrier Penetration Seals in Nuclear Power Plants," (which incorporates the findings from SECY-96-146) it discusses how</p> |

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| | | | <p>some shrinkage is normal and acceptable for fire protection based on Dow Corning guidelines, which is a major manufacturer of silicone-based materials. The staff concluded that <i>normal</i> shrinkage does not have a significant impact on the function and capabilities of silicone foam or elastomer as a fire barrier penetration seal material. However, shrinkage could be considered abnormal if it exceeds what is acceptable for fire protection purposes. Furthermore, the AMP is specifically designed to look at several aging effects; including abnormal shrinkage, which could lead to cracking and separation of seals. In addition, the staff did not conclude in SECY-96-146 that abnormal shrinkage and aging could <i>never</i> occur in the future as plants operate beyond 40 years.</p> <p>All previous license renewal applicants have taken credit for programs to manage aging of penetration seals in their aging management programs. Programs currently inspect up to 10% of each type of seal each refueling outage and only expand the inspection scope beyond 10% if they detect age related degradation of penetration seals. These programs are consistent with the requirements of GALL.</p> |
| 62 | NFPA commitments | G-XI-M10-2 | <p>NEI commented that meeting applicable NFPA commitments and the additional internal inspections of system components when disassembled along with maintaining the system at normal operating pressure provide the assurance that the system intended functions are maintained.</p> <p>The staff considers that the NFPA codes alone are not sufficient to detect MIC, corrosion, or fouling in water-based fire suppression systems prior to a loss of the intended function.</p> <p>NFPA does not have a license renewal rule (like the NRC does), which states that programs should manage the effects of aging prior to the loss of the intended function. The programs in NFPA are <i>minimum requirements</i> that do not focus on the detection of aging effects prior to loss of the intended function, as our license</p> |

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| | | | <p>renewal rule states. It clearly states in the NFPA codes that the AHJ, which in this case is the NRC, has the authority to modify the code based on the concern/hazard. In this case, the NRC has the authority to enhance the guidance contained in NFPA.</p> <p>The staff is considering revising GALL to recommend internal inspections for portions of piping to ensure that corrosion, MIC, fouling have not caused significant wall thinning and guidance to ensure sprinkler head operability throughout the period of extended operation. The revised program description would read: In addition to NFPA codes and standards, which do not currently contain programs to manage aging, portions of the fire protection sprinkler system, which are not routinely subjected to flow, need to be subjected to full flow tests at the maximum design flow and pressure before the period of extended operation (and at 10-year intervals thereafter). In addition, a sample of sprinkler heads should be inspected by using the guidance of NFPA 25, Section 2.3.3.1. This NFPA section states "where sprinklers have been in place for 50 years, they shall be replaced or representative samples from one or more sample areas shall be submitted to a recognized testing laboratory for field service testing." It also contains guidance to perform this sampling every 10 years after the initial field service testing. Finally, portions of fire protection suppression piping located aboveground and exposed to water also need to be disassembled and visually inspected internally once every refueling outage. The purpose of the full flow testing and internal visual inspections is to insure that corrosion, MIC, or biofouling aging effects are managed such that the system function is maintained.</p> <p>Element 10 may also be modified to remove the reference to at least 80 years. This element would state, "Water-based fire protection systems designed, inspected, tested, and maintained in accordance with NFPA standards have demonstrated reliable performance."</p> |

